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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,139	04/11/2001	Mark E. Kuznetsov	1058-US	1637

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EXAMINER

VY, HUNG T

ART UNIT PAPER NUMBER

2828

DATE MAILED: 09/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/833,139

Applicant(s)

KUZNETSOV, MARK E.

Examiner

Hung T Vy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

DETAILED ACTION

1. In response to the communications dated 01/26/2001, claims 1-20 are pending in this application.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant.

Information Disclosure Statement (IDS) filed on 04/11/2001 and made of record as Paper No. 3.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites a mathematical equation containing the variable V_r . However the specification fails to define the variable V_r .

Claims 2-6 depend from rejected claim 1 thereby render these dependent claims indefinite.

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 - 20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1-20 are confusing, vague, and indefinite

Claim 1 recites an equation without the recitations of any means or structure to comply with the 35 USC 112, 2nd paragraph. The claim recites a mathematical algorithm in such a way that it is not clear as whether the invention represented by the equation is a design choice, or the invention represented by the equation is under experimentation. The mathematical algorithms in the claim render the claim confusing, vague, and indefinite.

Regarding claim 7, the phrase "mirror structure" and "ratio of the mode $1/e^2$ " renders the claim indefinite because it is unclear what are a mirror structure and the mode $1/e^2$. The phrase "a ratio of the mode $1/e^2$ intensity of a lowest order mode to the full width at half maximum (FWHM) diameter of the curved surface" is vague and indefinite because it is unclear what is meant by the phrase "intensity of a lowest order mode".

Regarding claim 12, the phrase "mirror structure" and "selected in combination with a length of the cavity is to degrade a stability of transverse modes with mode numbers 4 and greater" renders the claim indefinite because It fails to provide any *mirror*

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structural arrangement
structure

limitations / connections to conform the mirror structure. It is not clear what "mode numbers" and "transverse modes" mean.

Regarding to claim 20 is not clear and confuses to show the entire element in the claim and cannot be reading in any figure in specification. It is not clear which figure relates to claim 20.

Claims 2-6, 8-11 and 13-19 depend from rejected claims 1,7,and 12 thereby render these dependent claims indefinite.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 12 -20 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Hendow et al., U.S. patent No. 5,418,641.

Regarding to claims 1-6, Hendow et al. disclose an optical resonator comprising one optical defined by 2 mirror structures (22 and 21) (see fig 6). It is inherent that an optical distance (L) between the mirror structures is tunable and the mirror structures has a mirror profile having a diameter and sag that are selected in combination with a length of cavity to degrade a stability of transverse modes.

Hendow et al. disclose the claimed invention except for the value of V_r , optical cavity, sag and width. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have those value, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim Rejections - 35 U.S.C. § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-11 rejected under 35 U.S.C. 103 (a) as being unpatentable over Hendow et al., U.S. patent No. 5,418,641 in view of Weingarten et al., U.S. patent No.6,393,035.

Regarding to claim 7 and 10-11, Hendow et al. disclose optical resonator having an optical defines by a first mirror structure comprising a substantially flat surface (21) and second mirror structure comprising a curved surface (22)(See fig 6) and distance between the mirror structure is tunable but Hendow et al. do not teach the mirror which are a dielectric mirror and ratio of the mode $1/e^2$ intensity. However, Weingarten et al.

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disclose the dielectric mirror (see column 12, line 54-55). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify to have the dielectric mirror because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

Regarding to claim 8-10, Hendow et al. disclose the claimed invention except for the ratio. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have those ratio, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Citation of Pertinent References

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Pezot discloses Laser Generator For Single Transverse Mode Operation, U.S. Patent No. 3,825,856.

The patent to Wang et al. disclose Single Mode Operation of Microelectromechanically Tunable, Half-symmetric, Vertical Scavity Surface Emitting Lasers, U.S. Pub No. 0048301.

The patent to Danziger et al. disclose Optical Resonator With Spiral Optical elements, U.S. Patent No. 6,134,259.

The patent to Korn discloses System and Process Fabry-Perot Filter Train Configuration Using Derived Mode Field size In Fiber Optic System, U.S. Patent No.6, 377,386.

Conclusion

8. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0757. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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September 11, 2002